CITY OF HAYWARD

AGENDA REPORT

AGENDA DATE 12/06/05

AGENDA ITEM 6

WORK SESSION ITEM

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT: Adoption of 2005 Urban Water Management Plan

RECOMMENDATION:

It is recommended that the City Council adopt the attached resolution approving the 2005 Urban Water Management Plan.

DISCUSSION:

The 1983 Urban Water Management Planning Act and subsequent additional legislation requires all California water agencies that supply more than 3,000 acre-feet annually (approximately 2.6 million gallons per day) of water, or have more than 3,000 connections, to prepare an Urban Water Management Plan (UWMP) update every five years. The next UWMP must be approved and submitted to the State Department of Water Resources before the end of 2005. The 2005 update covers the planning period of 2005 through 2030. The 2005 UWMP has been prepared in accordance with State guidelines and in cooperation with the City's wholesale water supplier, the San Francisco Public Utilities Commission (SFPUC).

UWMPs provide local agencies, such as Hayward, with a tool to comprehensively and systematically review water usage trends, projected water demand and supplies, alternative sources, and potential water conservation measures. A copy of the UWMP, without appendices, is attached as Exhibit A to this report.

Projected Water Demands

Water consumption tends to vary from year to year, depending upon precipitation, economic conditions, and other factors. The water demand projections contained in the 2005 UWMP were developed as part of a series of rigorous technical studies prepared by the SFPUC in 2004, using a detailed model to establish base-year water demand conditions and forecast future water demand based on anticipated residential and business growth. The potential growth in each customer sector and related water demands, based on local conditions, were analyzed and incorporated into the model.

Hayward is currently the largest wholesale municipal customer of SFPUC water outside of the City of San Francisco, with current average daily consumption of about 19.7 million gallons per

day (mgd). It is anticipated that overall water usage in Hayward may increase to 27.9 mgd in 2030. The following table summarizes projected water usage in five-year increments through 2030.

	2005	2010	2015	2020	2025	2025
Projected Water Demand (in million gallons/day)	19.7	21.8	22.8	24.4	26.1	27.9

The projected additional usage is higher, by volume, than other communities in the Bay Area that purchase SFPUC water. However, there are several distinguishing features that staff considered in preparing the water demand projections, one of which is projected changes in industrial uses and another is our lower per capita usage compared to other agencies.

With respect to industrial/commercial water use, the demand model relied heavily on employment growth to determine future industrial and commercial water usage. While this is a critical aspect, staff believes that Hayward's industrial water usage will be impacted by other factors as well. Increased industrial and commercial water demand is expected to result from the growing diversity in types of businesses that locate in Hayward and the desire on the part of the City to convert existing warehouse and distribution space to manufacturing and research and development uses, which typically use higher quantities of water. As the high costs of space on the Peninsula and within the "Silicon Valley" cause some businesses to leave their current locations, Hayward offers relatively more affordable space, along with access to a qualified workforce and public transportation. These types of changes in the industrial sector prompted staff to work with the SFPUC to develop more realistic industrial and commercial projections.

Residential water usage projections are based on potential residential development, in accordance with adopted land use polices, along with currently known development projects, anticipated rehabilitation of existing homes, historical water usage data, and population forecasts. Hayward's current per capita water usage is one of the lowest among communities that purchase water from SFPUC. While every effort will be made to maintain low per capita use through water conservation strategies, staff expects that average residential water use will go up. Existing properties in Hayward are relatively affordable, in comparison to other Bay Area cities, prompting purchasers to buy existing homes and upgrade them with improved landscaping and other features. Also, new homes in Hayward, even with meeting the City's Water Efficient Landscape Ordinance provisions, are using an average of about 400 to 600 gpd, significantly higher than the overall average residential consumption. With the City's desire to improve the overall appearance of the City and to encourage property owners to install and maintain landscaping, it is expected that residential water usage will increase in response.

Water Supply

Since 1963, Hayward has obtained its potable water supply from the SFPUC, primarily through the Hetch Hetchy water system. This supply is based on an agreement between the City and SFPUC that provides Hayward with the water it needs as long as such supplies are within

SFPUC's ability to deliver, and water supply conditions are normal. The SFPUC meets its water demands with an integrated system of imported water from Hetch Hetchy and local watershed facilities to capture runoff. The SFPUC has verified that it will be able to meet Hayward's projected water demands through 2030, during years of normal precipitation.

Hayward has installed five emergency wells, and intertie connections are available to East Bay Municipal Utilities District and Alameda County Water District. Both of these sources are intended for short-term emergency use only. It is anticipated that the SFPUC will remain the City's sole supplier of potable water.

Hayward delivers water to its customers through a distribution system comprised of 325 miles of pipeline, thirteen storage reservoirs, seven pump stations delivering water to the upper elevations, transmission system pressure reducing valves, and two booster pump stations. The *Water System Master Plan* was updated in 2002 and included recommendations to meet future demands, some of which have been constructed and others included in the Five-Year Capital Improvement Program. Hayward has also made extensive seismic improvements to the water system.

Water Supply Reliability and Water Shortage Contingency Plan

The Urban Water Management Planning Act requires agencies to evaluate the reliability of their water supplies, in coordination with wholesale suppliers, and to present a plan for managing water shortages. The SFPUC has confirmed in writing that it anticipates being able to meet Hayward's projected water demand during years of normal precipitation. However, the water supply is vulnerable to climatic conditions, that is, lower than normal precipitation levels, which may result in periodic water shortages, especially during periods of multiple dry years.

The current supplies available to SFPUC wholesale and retail customers include water from the Tuolumne River and supplies from local reservoirs. In order to enhance the reliability of the water system supply, the SFPUC is implementing a Water System Improvement Program (WSIP) to increase seismic reliability and to provide additional water sources during dry years. The WSIP is a comprehensive system-wide program that will include construction and rehabilitation of major pipelines and water storage facilities, and seismic upgrades. The current cost estimate for the WSIP is about $4.3 billion, and the SFPUC anticipates completing the projects by 2017. Recently, the SFPUC released a notice of preparation for the program environmental impact report covering this significant undertaking. Hayward will directly benefit from many of projects in the WSIP, and completion of this program as a whole is essential to improving the seismic and drought reliability of the water system for all SFPUC customers.

In the event of a water supply shortage, available water will be allocated to SFPUC retail and wholesale customers in accordance with the Interim Water Shortage Allocation Plan (IWSAP) adopted by all purchasers of SFPUC water in 2000. The IWSAP allocates available water based on a formula that takes in account three factors: 1) each agency's supply assurance; 2) each agency's average purchases from SFPUC during the three years preceding adoption of the IWSAP; and 3) the average of purchases from SFPUC during the three years immediately preceding the shortage.

Hayward's success in managing previous water shortages will largely shape its plans for handling such events in the future. A water shortage would most likely result in a rationing program, which, depending upon the severity of the shortage, could include restrictions on non-essential activities such as washing vehicles, serving water in restaurants, washing outdoor structures and pavement, and filling swimming pools. Equitable water allotments would be developed for all customers, with excess use charges applied to water usage above the allocation for each account. The excess use rates would depend upon the magnitude of the shortage and the excess use rates charged to Hayward by the SFPUC.

Water Recycling

The Urban Water Management Planning Act requires the examination of current and potential uses of recycled water; that is, treated wastewater used for specific purposes such as irrigation and industrial use. Hayward disposes of treated wastewater through the East Bay Dischargers Authority (EBDA) pipeline. EBDA currently provides about 3.2 mgd of recycled water to two sites within Hayward: Skywest Golf Course and the Hayward Marsh. There is potential for the City to deliver an average of 4.1 mgd of wastewater to the proposed Russell City Energy Center to be used for cooling. Other potential uses include irrigation of the Hayward Executive Airport, local cemeteries, and colleges.

Constructing a distribution system to deliver recycled water to appropriate locations is expensive and often cost prohibitive at the local level. A feasibility study to explore additional uses of recycled water is included in the Five-Year Capital Improvement Program.

Water Conservation

Hayward continues to be committed to the implementation of cost effective water conservation strategies to reduce overall demand, as a signatory to the Memorandum of Understanding with the California Urban Water Conservation Council. Over the years, Hayward has implemented a variety of programs, including a residential plumbing fixture replacement program, a rebate program to encourage the replacement of existing toilets with low-flow models, leak detection and repair efforts, a water conservation rate structure, and public education/outreach materials. A Water Efficient Landscape Ordinance was adopted by the City Council over a decade ago to define standards for irrigation systems and plant materials in new developments. Staff is exploring additional water conservation programs that may be implemented at a regional level to achieve cost savings. Examples of such programs include commercial and multi-family toilet replacement programs, commercial water use audits, and school outreach.

Environmental Review

Urban Water Management Plans are statutorily exempt from environmental review, pursuant to Section 15282w of the California Environmental Quality Act Guidelines.

Prepared by:

Alex Ameri, Deputy Director of Public Works

Recommended by:

Robert Bauman, Director of Public Works

Approved by:

Jesús Armas, City Manager

Attachment:

Exhibit A: 2005 Urban Water Management Plan (without appendices)

DRAFT NH 11/29/05

HAYWARD CITY COUNCIL

RESOLUTION NO. _____

Introduced by Council Member _____

RESOLUTION ADOPTING THE 2005 URBAN WATER MANAGEMENT PLAN FOR THE CITY OF HAYWARD

WHEREAS, the 1983 Urban Water Management Act, amended through 2004, requires all California urban water agencies that supply more than 3,000 acre feet per year of water or have more than 3,000 connections to prepare an Urban Water Management Plan (UWMP) every five years and the next UWMP must be adopted before the end of 2005; and

WHEREAS, locally, preparation of this document allows for a comprehensive and systematic review of water usage trends, projected water demand and supplies, water sources, and potential water reduction opportunities; and

WHEREAS, the City of Hayward has prepared an Urban Water Management Plan in compliance with provisions of the Urban Water Management Planning Act and in coordination with the City's wholesale water supplier; and

WHEREAS, the Director of Public Works has submitted to the City Council for review a copy of the draft Urban Water Management Plan and staff report dated December 6, 2005, and has made available for public review the 2005 UWMP in its entirety; and

WHEREAS, a public hearing was held on December 6, 2005, in the manner prescribed by law.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Hayward that the plan entitled "2005 Urban Water Management Plan," a copy of which is on file in the office of the Department of Public Works and the office of the City Clerk, is hereby adopted as the urban water management plan for the City of Hayward.

IN COUNCIL, HAYWARD, CALIFORNIA _____, 2005

ADOPTED BY THE FOLLOWING VOTE:

AYES:

NOES:

ABSTAIN:

ABSENT:

ATTEST:_____
City Clerk of the City of Hayward

APPROVED AS TO FORM:

_____
City Attorney of the City of Hayward

CITY OF HAYWARD

2005 URBAN WATER MANAGEMENT PLAN

DRAFT
NOVEMBER 2005

EXHIBIT A

CITY OF HAYWARD
2005 URBAN WATER MANAGEMENT PLAN

TABLE OF CONTENTS

APPENDICES

TABLES

FIGURES

URBAN WATER MANAGEMENT PLAN DEVELOPMENT AND ADOPTION

The 2005 Urban Water Management Plan (UWMP) for the City of Hayward has been prepared and adopted in accordance with requirements of the Urban Water Management Planning Act, a copy of which is included in Appendix A.

PUBLIC PARTICIPATION

Hayward is an ethnically and socio-economically diverse community. Public participation in the development of the UWMP was encouraged. Notices of public hearing were published in the Daily Review, the local newspaper with the largest circulation in Hayward. Notices were posted at City Hall, in Hayward public libraries, on the City's website and on the cable television public access channel. Copies of the draft plan were available for public review and comment prior to the hearing.

PLANNING COORDINATION

The City of Hayward coordinated with its water supplier, the San Francisco Public Utilities Commission (SFPUC), in preparation of the UWMP. Hayward is a member of the Bay Area Water Supply and Conservation Agency (BAWSCA), which was created in May 2003 to represent the regional interests of 26 cities and water districts, and 2 private utilities, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the San Francisco Regional Water System. The City participates in regional water conservation programs through BAWSCA and in efforts to work with San Francisco to ensure that the regional water system is reliable. The 27 other BAWSCA members were notified of the City's intention to update its Urban Water Management Plan.

The City owns and operates its own wastewater treatment facility and is a member of the East Bay Dischargers Authority (EBDA), a joint powers authority represented by five agencies that dispose treated wastewater through a common outfall to the San Francisco Bay. EBDA was notified of the City's intention to prepare the UWMP and provided information regarding water recycling that was incorporated into the Plan. Through its membership in EBDA, the City may explore potential future water recycling and reclamation projects.

Hayward's General Plan, adopted in 2002 and most recently amended in 2003, was used as a resource in developing water demand projections, and City Planning staff reviewed the UWMP.

In addition to the above agencies, the City also notified the East Bay Municipal Utilities District and County of Alameda of Hayward's intention to update and adopt the UWMP and made copies of the Plan available to these agencies for review.

ADOPTION OF 2005 URBAN WATER MANAGEMENT PLAN

The City of Hayward City Council adopted the 2005 Urban Water Management Plan at its regular meeting on Tuesday, December 6, 2005 after a public hearing, broadcasted on cable television and on the City's website. A copy of the resolution and notices regarding the preparation and adoption of the UWMP are included in Appendix B.

The adopted UWMP is available for review by the public during business hours at the Hayward City Hall. Paper or electronic copies may also be mailed upon request.

CHAPTER 2

SERVICE AREA

This section provides a brief history of the City of Hayward Water System, a description of the local climatic, current and projected population estimates, and development factors that may impact future water demand.

HISTORY

Hayward is a city of approximately 146,000 residents, located in Southern Alameda County on the east shore of San Francisco Bay. Hayward was incorporated in 1876 and occupies an area of about 61 square miles. It is generally flat, except for the areas east of Mission Boulevard, where the elevation increases from 100 to 1,500 feet above sea level.

Settlement in the Hayward area began in about 1851 with the opening of a general store in what is now the downtown. Hayward remained essentially a small agrarian town until the end of World War II. Since then, it has undergone substantial changes. A tremendous increase in population occurred in the 1950s and 1960s as a result of the post-war construction boom. Hayward experienced a surge in industrial development during the 1960s and 1970s, which created employment opportunities and balanced, to some extent, the housing that was developed in earlier decades. During the last two and one half decades, Hayward has seen continued residential and industrial growth, mostly in the form of infill development. Today Hayward enjoys a large and diverse industrial sector, including food and beverage and high-technology manufacturing, along with a growing number of biotechnology firms.

Water service is provided by the City of Hayward for residential, commercial, industrial, governmental, and fire suppression uses. Originally, wells were used to supply Hayward with water. During the 1940s and 1950, the well water was supplemented by water purchased from San Francisco's Hetch Hetchy system, owned and operated by the San Francisco Public Utilities Commission (SFPUC). In 1962, Hayward entered into an agreement with the SFPUC to purchase all Hayward water from the SFPUC. Hayward constructed over 20 miles of aqueduct in order to deliver Hetch Hetchy water and ceased providing well water in 1963.

SERVICE AREA POPULATION

Hayward's current residential population is about 146,000 (California Department of Finance estimate of January 1, 2005). The vast majority of this population, plus almost all industrial and commercial entities, are served by the City of Hayward Water System. A very small portion of north Hayward, less than 1% of Hayward's total population, is served by the East Bay Municipal Utilities District. The population estimates shown in

Table 2-1 are excerpted from the Association of Bay Area Governments (ABAG) Projections 2002 and are consistent with the population data that was used to develop future water demands.

Table 2-1
Current and Projected Population

Year	2005	2010	2015	2020	2025	2030
Population	146,000	150,500	153,400	156,600	160,300	162,800

Sources: ABAG Projections 2002, and SFPUC Wholesale Customer Water Demand Projections Technical Report, 2004

CLIMATE

Hayward has a Mediterranean coastal climate, with mild and dry summers, and cool winters. Most of the precipitation is received during the winter months, with only very occasional summer showers. Banks of fog often move inland during summer nights from the Pacific Ocean and evaporate during the day. The total water consumed in Hayward is moderately influenced by precipitation and temperature.

Table 2-2 illustrates average evapotranspiration (ET), rainfall, and temperature data. ET is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues), and is an indicator of how much water crops, lawns, gardens, and trees need for healthy growth and productivity. ETo refers to evapotranspiration as measured from a grass surface.

Table 2-2
Climate Characteristics

Month	Standard Monthly Average ETo [1]	Average Rainfall (inches) [2]	Average Min Temperature (Fahrenheit) [2]	Average Max Temperature (Fahrenheit) [2]
January	1.48	3.84	42.0	55.2
February	1.88	2.73	45.2	59.0
March	3.35	2.40	46.6	61.2
April	4.74	1.36	48.7	64.0
May	5.36	0.36	51.7	66.6
June	6.25	0.13	54.6	69.5
July	6.74	0.05	56.1	70.9
August	5.99	0.05	56.9	71.5
September	4.52	0.24	56.7	73.5
October	3.43	1.12	52.8	69.9
November	1.82	2.56	47.5	62.6
December	1.48	3.20	42.8	56.0
Annual	47.04	18.03	50.1	65.0

(1) Source: California Irrigation Management Information System (CIMIS), State of California Department of Water Resources

(2) Source: 30-Year Monthly Climate Summary for Oakland WSO AP, Desert Research Institute, Western Regional Climate Center

DEMOGRAPHIC AND ECONOMIC TRENDS AFFECTING WATER MANAGEMENT

The water demand projections presented in the UWMP are based, in part, in population and business trends developed by ABAG. The population data in Table 2-1 reflects ABAG projections. Over the next 20 years, increased water demand will result from residential development, including infill, redevelopment, and construction of larger homes. The number of households is expected to increase by about 17% between 2005 and 2030.

ABAG also estimates a 34% increase in the number of jobs in Hayward between 2005 and 2030, which is twice as large as the projected population growth for the same period, with a significant portion of the new employment occurring in the manufacturing/ wholesale and health/education fields. Smaller overall increases are expected in the retail and professional services.

A full discussion of the specific demographic and development issues that may affect water demand is located in the Projected Water Use chapter of the UWMP.

CHAPTER 3

WATER SUPPLY AND DISTRIBUTION

This section describes the City of Hayward's current and future water supplies, both for long-term and short-term (emergency) use.

WATER SUPPLY

Hayward's sole source of drinking water since 1963 has been the City and County of San Francisco's regional system, operated by the Public Utilities Commission (SFPUC). This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watershed and facilities in Alameda.

The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm up its water supplies. The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff.

The business relationship between San Francisco and its wholesale customers is largely defined by the "Settlement Agreement and Master Water Sales Contract" executed in 1984. The Master Contract primarily addresses the rate-making methodology used to set wholesale water rates for its wholesale customers and water supply and water shortages for the regional system. The contract expires in June 2009.

In terms of water supply, the Master Contract provides for a 184 million gallon per day (mgd) supply assurance to the SFPUC's wholesale customers, subject to reduction in the event of drought, water shortage, earthquake, other disasters, or rehabilitation and maintenance of the system, which may affect water distribution. The SFPUC's wholesale customers have agreed to the allocation of 184 mgd among themselves, with each entity's share of the supply assurance set forth in a schedule adopted in 1993. The supply assurance survives the termination of the Master Contract in 2009.

Hayward's water supply from SFPUC is based on a supply agreement signed by both agencies in 1962. This agreement provides Hayward with all of its needed water supply, as long as such supplies are within SFPUC's ability to deliver and water supply conditions are normal. In effect, Hayward does not have a numerical limit on the amount of water that is provided by SFPUC; however, Hayward has strived to keep water demands as low as

possible through water conservation and demand management. The contract has no expiration date.

On April 6, 2005, Hayward provided SFPUC with the amounts of water that Hayward expected to purchase for the next 25 years, in five-year increments. These estimates, summarized in Table 3-1, were consistent with the projected purchases identified in the 2004 SFPUC Wholesale Customer Water Demand Projections and discussed fully in Chapter 4, Projected Water Demands.

Table 3-1
Water Purchase Estimates – In Million Gallons/Day

	2010	2015	2020	2025	2030
Demand Projection	21.8	22.8	24.4	26.1	27.9

Sources: Wholesale Customer Water Demand Projections and 2030 Purchase Estimates, San Francisco Public Utilities Commission, 2004. Confirmed in communication to SFPUC dated April 6, 2005

On June 1, 2005, SFPUC provided written water availability projections verifying its ability to meet Hayward's projected demand under normal operating conditions. The written documentation provided by the City of Hayward and SFPUC is included in Appendix C.

The following table summarizes current and anticipated water supply sources.

Table 3-2
Current and Planned Water Supplies – In Million Gallons/Day

Source	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Purchased from SFPUC	19.0	21.8	22.8	24.4	26.1	27.9
% of Supply	100%	100%	100%	100%	100%	100%

Table 3-3
Current and Planned Water Supplies – In Acre-Feet/Year

Source	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Purchased from SFPUC	21,283	24,419	25,539	27,331	29,236	31,252
% of Supply	100%	100%	100%	100%	100%	100%

Sources: Wholesale Customer Water Demand Projections and 2030 Purchase Estimates, San Francisco Public Utilities Commission, 2004. Confirmed by SFPUC in communication dated June 1, 2005

WATER SUPPLY PROJECTS AND PROGRAMS

Water Supply Improvement Program

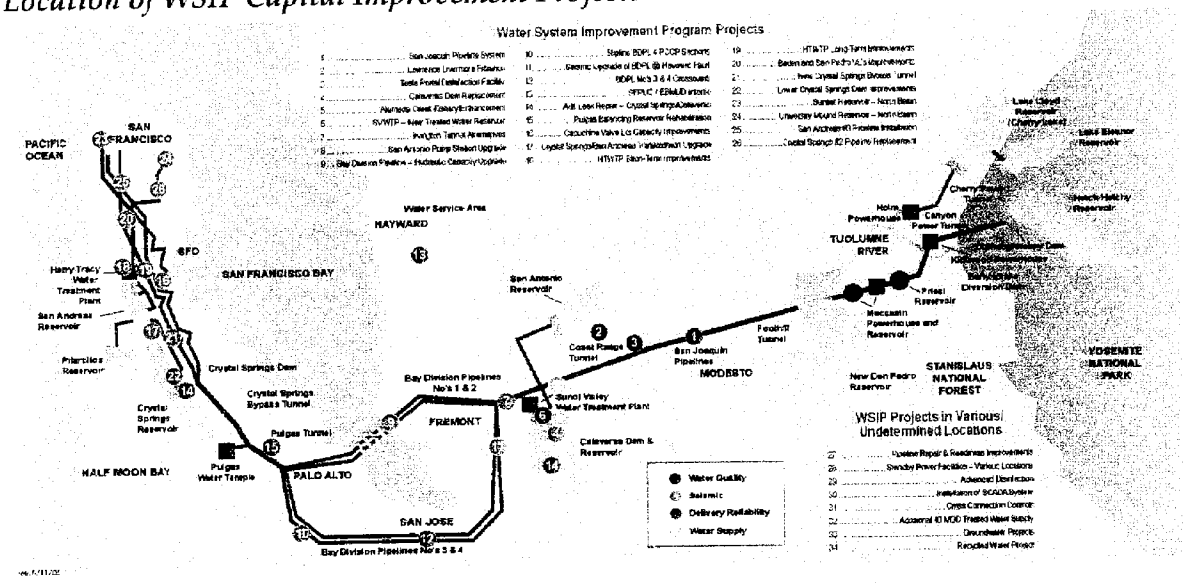
In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, and water supply, the SFPUC is undertaking a Water System Improvement Program (WSIP). The WSIP will deliver capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high

quality water to its customers in a reliable, affordable and environmentally sustainable manner.

The origins of the WSIP are rooted in the *Water Supply Master Plan* (April 2000). Planning efforts for the WSIP gained momentum in 2002 with the passage of San Francisco ballot measures Propositions A and E, which approved the financing for the water system improvements. Also in 2002, Assembly Bill 1823, the Wholesale Regional Water System Security and Reliability Act, was passed in and signed into law. This legislation sets forth requirements and timelines for the adoption and implementation of the WSIP, which is expected to be completed in 2016.

Figure 3-1 indicates the locations of the various capital improvement projects which comprise the WSIP.

Figure 3-1
Location of WSIP Capital Improvement Projects



Water Supply Projects

The current supplies available to the SFPUC Regional Water System include the Tuolumne River (through the Hetch Hetchy System) and supplies from local reservoirs. The 2005 UWMP assumes that these existing supplies will continue to be available in the future. As demand increases over time, SFPUC will continue to rely on the existing sources to meet demand in most years, plus additional water sources identified in the WSIP in dry years. These dry year supplies are summarized below in Table 3-4. The 2005 UWMP assumes that these resources will be available in the volumes and timeframes indicated.

Table 3-4
Water Supply Options for 2010 through 2030 – In Acre-Feet

	2005	2010	2015	2020	2025	2030
Crystal Spring Reservoir (22 billion gal)	No	Yes	Yes	Yes	Yes	Yes
Westside Basin Groundwater (acre-feet annually)	0	4,500	7,000	8,100	8,100	8,100
Calaveras Reservoir Recov (31.5 billion gal)	No	No	Yes	Yes	Yes	Yes
Districts Transfer (acre-feet annually)	0	23,200	23,200	29,000	29,000	29,000

Source: SFPUC in communication dated June 1, 2005

Program Environmental Impact Report

A Program Environmental Impact Report (PEIR) is being prepared under the California Environmental Quality Act (CEQA) for the WSIP. A PEIR is a special kind of environmental impact report under CEQA that is prepared for an agency program or series of actions that can be characterized as one large project. PEIRs generally analyze broad environmental effects of the program with the acknowledgement that site-specific environmental review may be required at a later date.

Projects included in the WSIP will undergo individual project-specific environmental review as required. Under CEQA, project specific environmental review would result in preparation of a categorical exemption, negative declaration, or environmental impact report. Each project will also be reviewed for compliance with the National Environmental Policy Act and local, state and federal permitting requirements as necessary.

GROUNDWATER

The City of Hayward does not currently nor plans to use groundwater to meet any portion of its day-to-day normal water demand. Five emergency wells located within the City, and using local ground water, can provide a total of 13.6 million gallons per day. These wells do not run concurrently with the SFPUC source and have been certified by the California Department of Health Services for short duration emergency use only. While the wells are not considered part of the City's drinking water supply, Table 3-5 is included to demonstrate the capacity of wells in the event that SFPUC transmission lines are not able to meet the City's demands for a limited time.

Table 3-5
Emergency Well Capacity – In Million Gallons/Day

Well Identification	Capacity
Well A	1.7
Well B	2.9
Well C	4.6
Well D	1.4
Well E	3.0
Total	13.6

Source: City of Hayward Water System Master Plan, 2002

WATER TRANSFERS AND EXCHANGES

The City has established agreements with two neighboring agencies, East Bay Municipal Utilities District (EBMUD) and Alameda County Water District (ACWD), to receive or deliver water in the event of an emergency. A total of three interties are capable of delivering up to about 14 mgd. Delivery would depend upon each agency's ability to provide water without negatively impacting supplies or their own customers and emergency services. Table 3-6 summarizes the potential water available through these emergency interties.

Table 3-6
Emergency Interties and Capacities – In Million Gallons/Day

Agency	Potential Flow
Alameda County Water District	5.8
East Bay Municipal Utilities District (two locations)	8.7
Total	14.5

Source: City of Hayward Water System Master Plan, 2002

A project to convey potable water between SFPUC and EBMUD, using existing and new City of Hayward facilities, is currently under construction and expected to be completed in summer 2006. This intertie could supply up to 30 mgd from SFPUC to EBMUD and vice versa, providing Hayward with access to a portion of this supply.

All of the interties discussed in this section are intended for short-term emergency use only. There are currently no opportunities for the transfer or exchange of water supplies for long-term use.

RECYCLED WATER

The City of Hayward is a member of the East Bay Dischargers Authority (EBDA), a joint powers agency disposing of treated water through a large outfall to San Francisco Bay. Further information about current and potential water recycling projects in which the City participates, through EBDA, is found in the Water Recycling chapter. For the purposes of

projecting water demand, however, only purchased water is shown in Tables 3-2 and 3-3 due to the uncertainty of recycled water project implementation.

DESALINATION

Hayward currently has no opportunities for development of desalinated water supplies.

RESOURCE MAXIMIZATION

The City is committed to resource conservation, implementing water conservation measures, both locally and as part of BAWSCA's regional program. BAWSCA and its member agencies look for opportunities to work with other water agencies and leverage available resources in implementing water use efficiency projects. For example, in 2005, the SFPUC and BAWSCA entered into a Memorandum of Understanding regarding administration of a spray valve installation program to offer and coordinate installation of water conserving spray valves to food service facilities in BAWSCA member service areas, including Hayward. Also, the Bay Area Efficient Clothes Washer Rebate Program, a single rebate program offered by all major water agencies in the greater Bay Area, including BAWSCA and SFPUC, received $1.5 million in Proposition 50 grant funds for implementation in 2006-07. BAWSCA and its member agencies will continue to look to partner with other agencies to develop regional water conservation efforts that go beyond local issues of supply and cost effectiveness to examine costs, benefits and other related issues on a system-wide level. The goal is to maximize the efficient use of water regionally by capitalizing on variations in local conditions and economies of scale.

Through its membership in EBDA, the City is also involved in water recycling, with the diversion of reclaimed water to a local golf course for irrigation. The 1993 Water Recycling Master Plan, discussed later in the UWMP, identifies other potential recycling projects. The City participated in the Bay Area Regional Water Recycling Program and has included a Recycled Water Feasibility Study in its five-year capital improvement program to update ongoing efforts to develop viable recycled water projects.

CURRENT AND PLANNED WATER DISTRIBUTION FACILITIES

Hayward delivers potable water through a pressurized distribution system, comprised of approximately 325 miles of pipeline, thirteen water storage reservoirs, seven pump stations delivering water to the upper pressure zones, transmission system pressure reducing valves, numerous zonal pressure reducing valves, and two booster pump stations. Water is received into Hayward through two main aqueducts. The facilities are monitored through a Supervisory Control and Data Acquisition (SCADA) system.

Distribution System Projects

In 2002, the City updated its *Water System Master Plan Update* to address major development plans and corresponding water demands and to account for improvements that had been constructed since the last Master Plan. An analysis was completed to assess future water demands, pumping capacity, water storage, distribution system hydraulics and water quality. The Master Plan update includes a number of recommended improvements. The City has constructed some of the recommended projects, such as upgrades to the Highland Chain pump stations. Other projects that are planned or currently under construction include improvements to the Garin Hill Pump Station, construction of a new Highland 1285 pump station and reservoir, various pipe looping projects, and replacement of aging mains. The City prepares a five-year capital improvement program annually.

The City has also made extensive efforts to seismically improve the water system, including seismic retrofits of several reservoirs and improvements to pipes at faultline crossings. Additional seismic projects are identified in the five-year capital improvement program. Recently, seismic design guidelines were prepared for future Hayward water facilities.

CHAPTER 4

PROJECTED WATER DEMANDS

This section addresses past, current and projected water use by customer sector and expected water usage patterns.

PROJECTED WATER USE DEVELOPMENT

The water demand projections were developed as part of a series of technical studies performed in support of the Capital Improvement Program for the SFPUC Regional Water System: SFPUC Wholesale Customer Water Demand Projections (URS 2004); SFPUC Wholesale Customer Water Conservation Potential (URS 2004); SFPUC Wholesale Customer Recycled Water Potential (RMC 2004); and SFPUC 2030 Purchase Estimates (URS 2004).

Water demand projections for the wholesale customers were developed using an "end use" model. Two main steps were involved: 1) establishing base-year water demand at the end-use level (such as toilets, showers) and calibrating the model to initial conditions; and 2) forecasting future water demand based on future demands of existing water service accounts and future growth in the number of water service accounts.

Establishing the base-year water demand at the end-use level was accomplished by breaking down total historical water use for each type of water service account (single-family, multi-family, commercial, irrigation, industrial, etc.) to specific end uses, such as toilets, faucets, showers, and irrigation. Forecasting future water demand involved determining the growth in the number of water service accounts in a wholesale customer service area. Once these rates of change were established, they were entered into the model and applied to those accounts and their end water uses. The model also incorporated the effects of the plumbing and appliance codes on fixtures, including toilets (1.6 gal/flush), showerheads (2.5 gal/minute), and washing machines (lower water use) on existing and future accounts.

The next step in the SFPUC study was to evaluate the cost effectiveness and water savings potential of various water conservation measures to determine how much of the projected demand could be met through cost effective demand management. The potential water conservations savings were deducted from the total demand to achieve a total purchase estimate from SFPUC. The final projected demand in this section reflects the SFPUC purchase estimate through 2030.

DEVELOPMENT FACTORS AFFECTING WATER DEMAND

Residential

Hayward's current housing stock is a mix of single-family detached, condominium, multi-family, and mobile home units. Approximately 60 percent of the total housing units are single-family detached, condominiums, and duplex to fourplex units. Hayward residents are among the lowest per capita water users as compared to other purchasers of SFPUC water. The demand study base year (2001) data shows Hayward's use to be 61 gallons per capita per day (gpcd) in single-family residential units and 54 gpcd in multi-family units.

There is potential for about 4,500 additional housing units, based on General Plan policies, over a 25-year planning period. Infill development and intensification of underutilized properties will comprise much of the residential building activity in the coming years. About 53% of the current units are owner-occupied; that is, the units are lived in by the family that owns the property. The City's Housing Element encourages the development of ownership housing and programs to assist tenants in becoming homeowners. The City has established a goal of a 70% owner-occupancy rate.

Several factors will impact per capita and overall residential water use during the course of the planning period, including:

- Increased projected population from the current 146,000 to 162,800 in 2030, an 11.5% increase
- Development of new housing units, as reflected in the City's General Plan, primarily through in-fill development and intensification of underutilized properties
- Rehabilitation of existing housing stock
- Increased number of persons per household, as projected by Association of Bay Area Governments

Several large residential projects are currently in development review or construction. In addition, the South Hayward BART Area study is currently underway to determine the potential development within this underutilized area. The potential number of dwelling units in the study area could be in the range of 3,000 to 5,000 net new dwelling units, depending on the final approved density for the area.

The Mt. Eden area is an unincorporated island, completely surrounded by Hayward. Water service is provided by a small, private, 100-customer community water company that utilizes local groundwater through a single well. Once the proposed annexation is finalized, it is expected that properties will gradually (over the next ten or so years) connect to the Hayward water system. There is potential for about 475 new dwelling units, plus development of commercial and light industrial businesses. The overall demand for this area, including residential and business uses, is projected to be about 300,000 gpd.

In addition to the development of new units, the existing housing stock is undergoing significant rehabilitation. More than 70% (about 15,000 units) of Hayward's single-family detached homes are of 1950s vintage. Some of these homes, which remain more affordable than new and existing homes in other Bay Area cities, are being renovated and upgraded over time, including installation of water efficient landscaping where it is currently minimal or non-existent. The City is encouraging renovation efforts with funding programs to clean up and landscape common areas within neighborhoods and to assist homeowners in rehabilitating their private properties. It is reasonable to assume that per capita water usage will increase above the current low usage as a result of these efforts.

The City has adopted and enforces a Water Efficient Landscape Ordinance for new development, both residential and commercial. The Ordinance, which is administered by a licensed landscape architect on staff, identifies the type of plant materials and irrigation systems that must be used in new developments to encourage low water use while maintaining attractive surroundings.

The composition of housing units (single-family and multi-family) in Hayward through the planning period were accounted for in the residential demand projections, with consideration of new development of both single-family and multi-family units and upgrade of existing properties.

Commercial

Commercial businesses include a typical mix of office-type services, specialty and big box retail stores, auto dealerships, eating establishments, and a regional shopping mall. Hayward's economic development goals include continuation of efforts to attract commercial businesses that will serve City residents, as well as the region.

Hayward is implementing a Downtown Design Plan to maintain the Downtown area as a focal point so that it continues to express the City's history, provide a venue for cultural event vitality, and remain a center for social, political and other civic functions. Downtown redevelopment efforts will focus on making it a pedestrian-friendly area with development of retail, residential, and office space.

In addition to Downtown, other areas that have been identified for commercial and mixed-use development include:

- Cannery Area
- Mission-Foothill Corridor
- South Hayward BART Station Area

A new 18-hole water-efficient golf course is also under construction.

Hayward is home to two regional public post-secondary educational institutions—California State University and Chabot Community College. Both have student populations of about 13,000. California State University is currently implementing several projects to increase the number of classrooms and teaching labs, expand the student union, and add student housing. Chabot College is preparing a Facilities Master Plan to guide future campus development, including additional teaching space. Both institutions expect to increase their water consumption as a result of their growth.

Industrial

Hayward has a large and diverse industrial sector, including food and beverage processing, high technology research and manufacturing, an increasing number of biotechnology research and development firms, and a wide range of other businesses. Hayward's central location in the Bay Area, availability of land zoned for industrial use, and relatively reasonable land and lease costs have helped attract a large variety of businesses. There is also significant potential for facilities now occupied by warehouses to be converted to research and development or manufacturing facilities. Job growth in Hayward, which grew by 13 percent during the 1990s, is expected to continue, with a 34% increase anticipated by 2030 (Source: *ABAG Projections 2005*).

The Economic Development element of the General Plan includes strategies to encourage and support further economic growth, both in traditional facilities and in the new information-based economy. Many of these strategies are focused on the types of businesses that may have higher-than-average water usage, such as high technology and biotech facilities. For example, a specific goal is to "...attract and assist medium size firms in recognized growth sectors including retail trade and services and high-tech, biotech, and research and development firms (emphasis added)". Because of the uncertainty regarding the precise types of businesses that will locate in the industrial sector during the planning period, the water demand projections include 400,000 gallons per day over and above normal expected additional industrial water use.

Hayward, like many Bay Area communities, experienced an economic downturn in the early part of this decade, resulting in the closure and reduced production of several major water-using businesses. The decrease in industrial water usage leading up to 2005 is a major contributor to the lower-than-anticipated water demand in 2005. Had demand progressed normally, the usage in 2005 would likely have been higher, and the change between 2005 and 2010 would have been less significant. However, reductions in water use due to changes in the economy are cyclical and occur from time and time, and water demand generally rebounds when the economy improves. Therefore, Hayward has prudently based future demand on normal economic conditions.

CURRENT AND FUTURE WATER DEMAND

Table 4-1 summarizes the anticipated number of accounts and projected water demand.

Table 4-1
Past, Current and Projected Water Demand (not including Water Conservation)

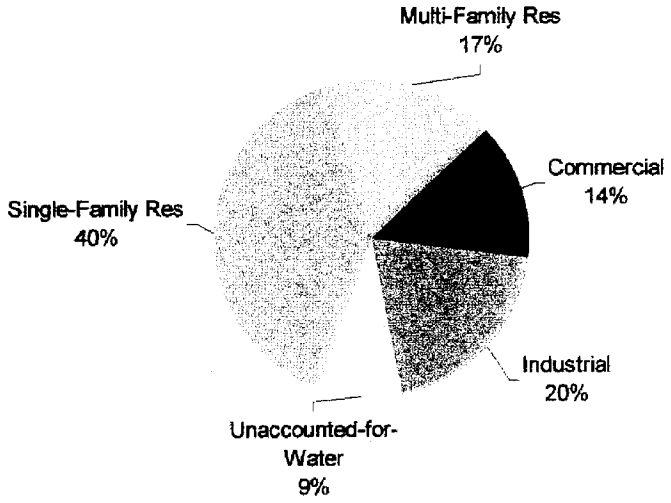
		2000	2005	2010	2015	2020	2025	2030
Single-Family	No. Accts	25,025	26,258	27,657	28,969	30,511	32,281	34,189
	AF/Year	7,436	8,856	9,157	9,914	10,771	11,722	12,731
	MG/Year	2,423	2,886	2,984	3,231	3,510	3,820	4,149
	Avg. MGD	6.7	7.9	8.2	8.9	9.6	10.5	11.4
Multi-Family	No. Accts	1,291	1,295	1,367	1,394	1,423	1,457	1,490
	AF/Year	4,514	3,839	4,573	4,519	4,493	4,499	4,545
	MG/Year	1,471	1,251	1,490	1,473	1,464	1,466	1,471
	Avg. MGD	4.0	3.4	4.1	4.0	4.0	4.0	4.0
Commercial/ Government	No. Accts	1,717	1,761	1,804	1,828	1,878	1,928	1,978
	AF/Year	3,391	3,032	4,012	4,171	4,545	4,935	5,330
	MG/Year	1,105	988	1,307	1,359	1,481	1,608	1,737
	Avg. MGD	3.0	2.7	3.5	3.7	4.1	4.4	4.8
Industrial	No. Accts	1,648	1,686	1,736	1,760	1,807	1,856	1,904
	AF/Year	4,278	4,450	4,861	5,097	5,589	6,093	6,598
	MG/Year	1,394	1,450	1,584	1,661	1,821	1.985	2,150
	Avg. MGD	3.8	4.0	4.3	4.5	5.0	5.4	6.0
Other (Metered Hydrant Use)	No. Accts	482	500	516	527	538	551	563
	AF/Year	273	40	80	82	84	86	88
	MG/Year	89	13	26	27	27	28	28
	Avg. MGD	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Additional Water Uses (1)	AF/Year	1,200	1,792	2,240	2,352	2,464	2,688	2,800
	MG/Year	391	584	730	766	803	876	858
	Avg. MGD	1.1	1.6	2.0	2.1	2.2	2.4	2.4
Total	No. Accts	30,163	31,500	33,080	34,478	36,157	38,073	40,125
	AF/Year	21,092	22,009	24,923	26,135	27,946	30,022	32,062
	MG/Year	6,873	7,172	8,121	8,516	9,106	9,783	10,447
	Avg. MGD	18.8	19.7	22.2	23.3	25.0	26.8	28.7

(1) Additional water uses include water used for hydrant flushing and fire suppression, as well as unaccounted for system losses. An average of 9 percent per year is included in Hayward's projections for future additional water uses and losses.

Sources: City of Hayward Water Consumption Records and SFPUC Wholesale Customer Water Demand Projections (URS November 2004)

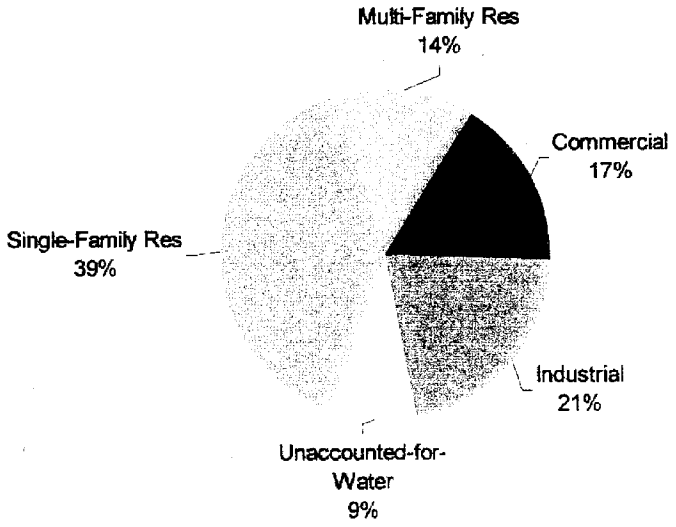
Current and future water use characteristics are illustrated in Figures 4-1 and 4-2. Figure 4-1 shows current (2005) water use among specific customer classifications. Residential water use currently makes up about 57% of total demand, whereas industrial and commercial usage comprises about 34% of the total.

Figure 4-1
Water Use by Customer Classification in 2005



The ratio between residential and non-residential is expected to adjust slightly during the planning period as more homes become outfitted with water-efficient appliances, so that by 2030, about 53% of the overall demand will be residential, 38% will be industrial/ commercial usage, and the remainder is listed as unaccounted for.

Figure 4-2
Water Use by Customer Classification in 2030



Sales to Other Agencies

Except for water delivered through the emergency interties established with East Bay Municipal Utilities District and Alameda County Water District, the City of Hayward does not sell, transfer, or otherwise convey water to other water agencies.

Additional Water Uses and Losses

Additional water uses include water used for hydrant flushing and fire suppression, as well as unaccounted for system losses. An average of 9 percent per year is included in Hayward's projections for additional water uses and losses, which is consistent with recent experience. This average includes hydrant flushing, fire suppression and maintenance uses, which in other agencies may be categorized as "other," but which Hayward does not account for separately. Additional flushing is being performed due to the change from chlorine to chloramine as a disinfectant. Table 4-1 includes anticipated additional uses and system losses.

Water Conservation Potential

Cost effective demand management measures were evaluated, as part of the SFPUC demand study, to determine how much of Hayward's demand could potentially be met through water conservation. (Further information about Hayward water conservation program is provided in the Water Conservation chapter of the UWMP.) Water conservation measures will be implemented for all customer sectors. This amount was deducted from the water demand to arrive at the total projected water deliveries through 2030.

Total Projected Water Deliveries

Table 4-2 totals projected water usage, including purchased water, system losses, and other uses, adjusted to account for the portion of demand that is expected to be met through water conservation.

Table 4-2
Total Projected Water Deliveries (including Water Conservation)

	2000	2005	2010	2015	2020	2025	2030
Acre-Feet/Year	21,092	22,009	24,419	25,539	27,331	29,236	31,252
Million Gallons/Year	6,873	7,172	7,957	8,322	8,906	9,526	10,183
Avg. Million Gallons/ Day	18.8	19.7	21.8	22.8	24.4	26.1	27.9

Source: SFPUC 2030 Purchase Estimates Technical Memorandum (URS December 2004). Confirmed in Hayward communication to SFPUC, April 6, 2005.

SUPPLY AND DEMAND COMPARISONS AND WATER SUPPLY RELIABILITY

This section describes the reliability of Hayward's water supply and its vulnerability to season and climatic shortages. Hayward distribution system is functioning reliably, and there are no groundwater recharge or overdraft problems. Under normal conditions, the City considers its water supply to be reliable.

The City of Hayward receives all of its water from the City and County of San Francisco's regional system, operated by the San Francisco Public Utilities Commission (SFPUC). This supply is predominantly from the Sierra Nevada, delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local facilities in Alameda and San Mateo Counties.

In 1984, Hayward, along with 29 other Bay Area water suppliers signed a Settlement Agreement and Master Water Sales Contract with San Francisco. This contract, which expires in June 2009, provides for a 184 million gallon per day (mgd, expressed on an annual average basis) supply assurance to the SFPUC's wholesale customers collectively. The Master Contract defines the business relationship between SFPUC and wholesale customers on such issues as wholesale water rates and accounting methods. Hayward's water supply from SFPUC is based on a supply agreement signed by both agencies in 1962, which does not have an expiration date. This agreement provides Hayward with its needed water supply, as along as such supplies are within SFPUC ability to deliver and water supply conditions are normal. In effect, Hayward does not have a numerical limit on the amount of water that is provided by SFPUC, but Hayward has strived to keep water demands as low as possible through water conservation and demand management. This is reflected in the fact that Hayward's per capita water usage is currently among the lowest of SFPUC wholesale customers.

SUPPLY AND DEMAND IN NORMAL YEARS

Supply and Demand Comparisons

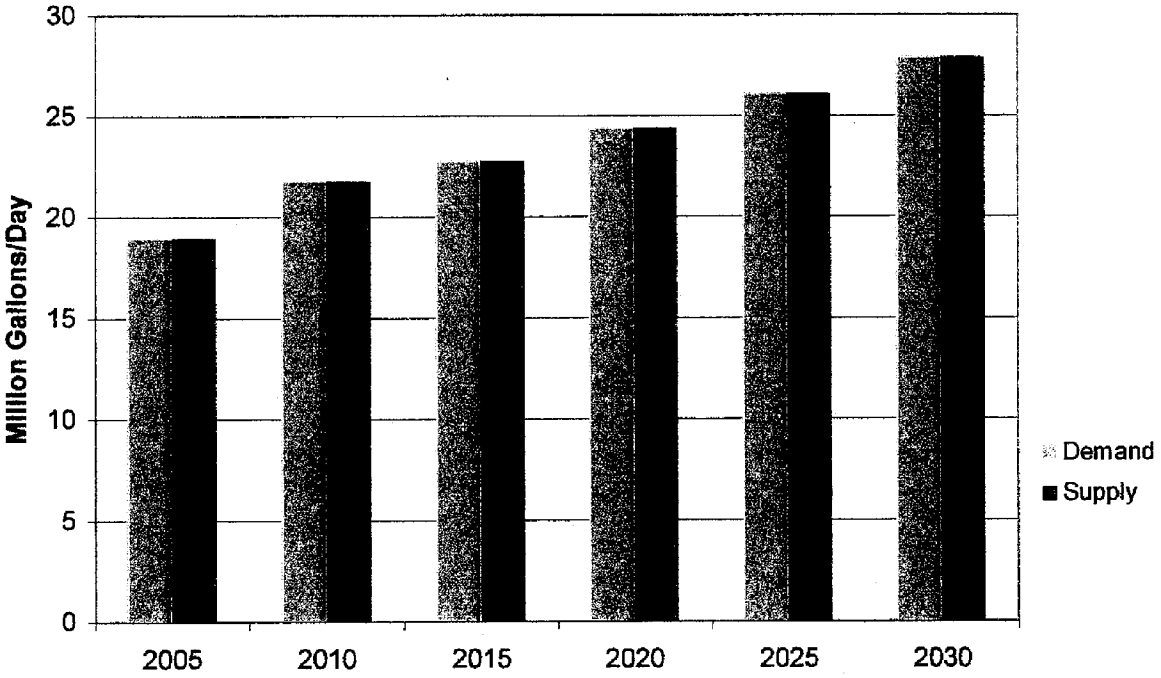
On April 6, 2005, Hayward provided the SFPUC with written demand projections. The SFPUC responded in writing on June 1, 2005 confirming it can meet Hayward's water demands in years of average and above average precipitation. Table 5-1 compares Hayward's projected supply and demand through 2030, assuming normal precipitation levels. The table indicates that adequate supplies are available to meet the demand.

Table 5-1
Projected Normal Year Supply and Demand Comparisons – In Million Gallons/Day

	2005	2010	2015	2020	2025	2030
Demand	19.7	21.8	22.8	24.4	26.1	27.9
Supply	19.7	21.8	22.8	24.4	26.1	27.9
% Deficiency	0%	0%	0%	0%	0%	0%

Source: San Francisco Public Utilities Commission communication dated June 1, 2005

Figure 5-1
Demand and Supply Comparison in Normal Years



SUPPLY AND DEMAND IN DRY YEARS

Basis of Water Year Data

The SFPUC evaluated the reliability of the water supply, given the estimated system purchases for the years 2010 through 2030 and the expected performance of the water system based on a repeat of the historical hydrology from 1920 through 2002. For the purposes of this analysis, the SFPUC assumed that the historical hydrologic period is indicative of future events. For example, the analytical results for 2010 indicate that system-wide rationing, varying from 10 to 20%, would be implemented in 9 out of 82 years. Such a hydrological analysis is consistent with the SFPUC's completed and ongoing planning efforts. The actual anticipated reduction for each agency receiving

water from SFPUC was based on the Interim Water Shortage Allocation Plan, described below.

Table 5-2
Basis of Water Year Data

Water Year Type	Base Year(s)	Historical Sequence
Normal Water Year	2004	
Single-Dry Water Year	1987	1920 - 2002
Multiple Dry Water Years	1987-1989	

Source: San Francisco Public Utilities Commission communication dated June 1, 2005

Interim Water Shortage Allocation Plan

The SFPUC has indicated that it can meet the demands of its retail and wholesale customers, including Hayward, in years of average and above-average precipitation. The Master Contract allows the SFPUC to reduce water deliveries to wholesale customers during periods of water shortage. Under the Master Contract, reductions to wholesale customers are to be based on each agency's proportional purchases of water from the SFPUC during the year immediately preceding the onset of the shortage, unless this formula is supplanted by a water conservation plan agreed to by all parties.

There was concern that this default formula could discourage SFPUC's wholesale customers from reducing purchases from SFPUC during periods of normal water supply. To overcome this problem, SFPUC and its wholesale customers adopted an Interim Water Shortage Allocation Plan (IWSAP) in 2000, which applies to water shortages up to 20 percent on a system-wide basis. The IWSAP will remain in effect through June 2009.

The IWSAP has two components. The Tier One component allocates water between San Francisco and the wholesale customers collectively, based on the level of shortage, as shown in Table 5-3.

Table 5-3
Allocation of Water Between San Francisco and Suburban Purchasers

Level of System-Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Suburban Purchasers' Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

Source: Interim Water Shortage Allocation Plan, 2000

The Tier Two component of the IWSAP allocates the collective wholesale customer share among each of the 28 wholesale agencies. This allocation is based on a formula that takes three factors into account, the first two of which are fixed: (1) each agency's supply

assurance from SFPUC (with certain exceptions); and (2) each agency's purchases from SFPUC during the three years preceding adoption of the IWSAP. The third factor is the agency's rolling average of purchases of water from SFPUC during the three years immediately preceding the shortage.

The IWSAP allows for voluntary transfers of shortage allocations between SFPUC and any wholesale customer and between wholesale customers. Also, water "banked" by a wholesale customer, through reductions in use greater than required, may be transferred.

The IWSAP will expire in June 2009 unless extended by SFPUC and the wholesale customers. The amount of water which Hayward expects to receive from SFPUC during dry years has been calculated by SFPUC on the assumption that the IWSAP will be extended beyond 2009.

Minimum Supply During Next Three Years

Table 5-4 projects minimum water supplies available for the next immediate three-year period, as confirmed by SFPUC, based on 2003-04 purchases. In the first year, a 9% reduction would be expected, based on the current water supply portfolio. In the second and third years of a three-year drought sequence, system-wide reductions of up to 20% per year, with cutbacks in Hayward of up to 22% and 24% respectively.

Table 5-4
Minimum Available Supply During Next Three Years – In Million Gallons/Day

	Normal Water Year	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Demand (1)	19.6	19.6	19.6	20.0	20.4
Supply	19.6	17.8	17.8	15.5	15.5
Difference	0	0	1.8	4.5	4.9
% Deficiency	0%	9%	9%	22%	24%

(1) Interpolated from 2030 Purchase Estimates, SFPUC, 2004
Source: San Francisco Public Utilities Commission communication dated June 1, 2005

Supply and Demand Comparisons in a Single Dry Year

Table 5-5 compares the projected single-dry-year supply and demand over the next 25 years. SFPUC anticipates that in the event of one critically dry year, a system-wide reduction would not be necessary until 2030, assuming that the water supply portfolio described in Table 3-4 is available.

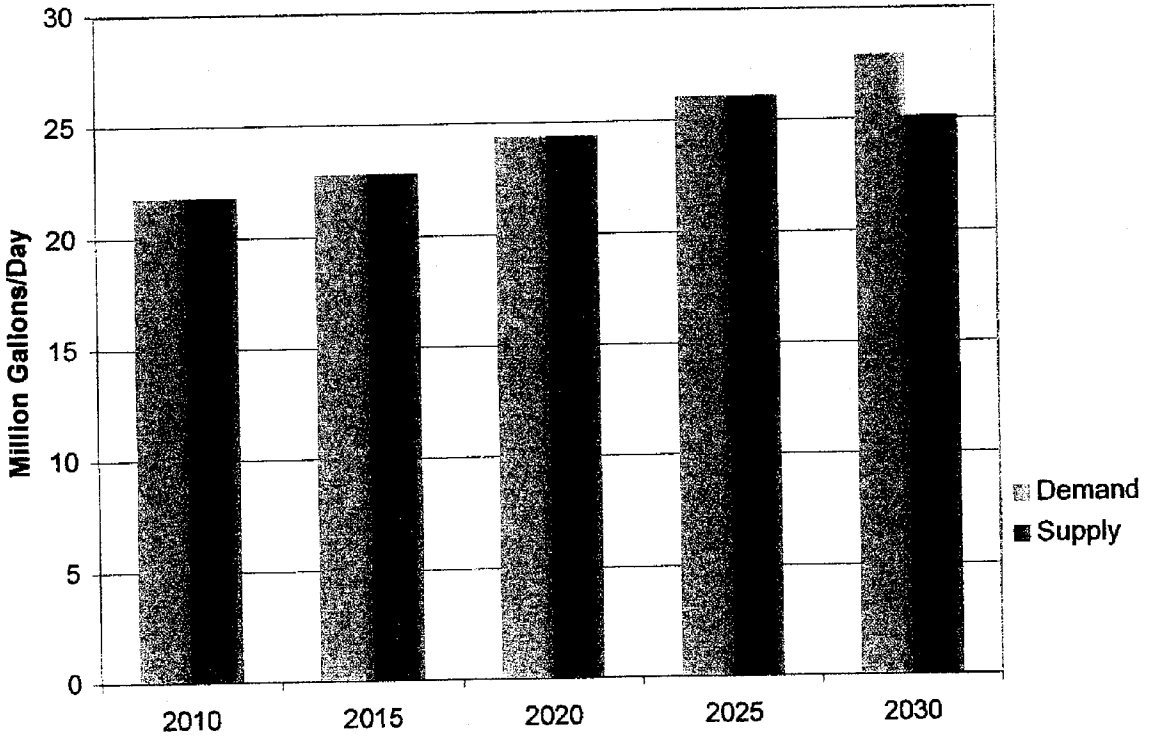
Table 5-5

Projected Single-Dry-Year Supply and Demand Comparison – In Million Gallons/Day

	2010	2015	2020	2025	2030
Demand	21.8	22.8	24.4	26.1	27.9
Supply	21.8	22.8	24.4	26.1	25.1
Difference	0.0	0.0	0.0	0.0	2.8
% Deficiency	0%	0%	0%	0%	10%

Source: San Francisco Public Utilities Commission communication dated June 1, 2005, except for 2030. The supply number in 2030 is higher than listed in the SFPUC communication and is based on a City of Hayward estimate assuming a 10% system-wide shortage.

Figure 5-2
Demand and Supply Comparison in Single Dry Year



Supply and Demand Comparison in Multiple Dry Years

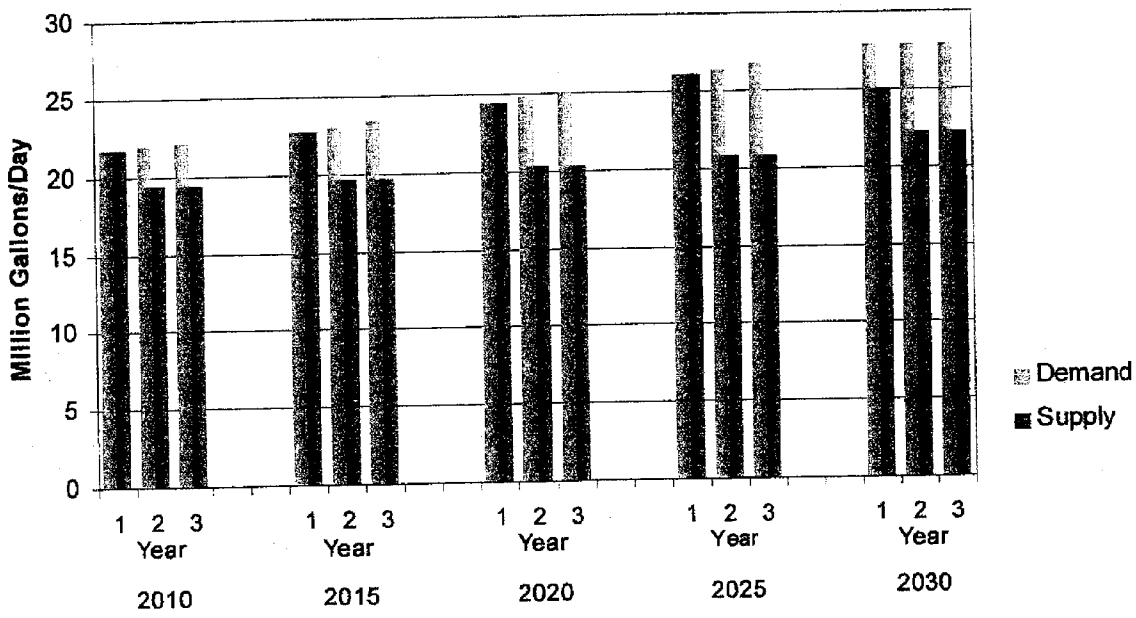
Table 5-6 compares projected supply and demand during multiple dry years over the next 25 years. Between 2005 and 2010, a reduction in water usage of roughly 90% in the first dry year would be needed, as shown in Table 5-4. However, the additional planned storage, which is expected to be operational in 2010 and is summarized in Table 3-4 of the Water Supply Chapter, would provide sufficient supply to fully meet the first dry year demands beyond 2010, until 2030. In the second and third dry years, water supplies would not meet demand, and system-wide reductions of 10 to 20 percent would be needed. For Hayward, this would result in cutbacks ranging from 12% in 2010 to 22% in 2025.

Table 5-6
Projected Multiple-Dry-Year Supply and Demand Comparison – In Million Gallons/Day

	2010	2015	2020	2025	2030
Multiple Dry Water Years - Year 1					
Demand	21.8	22.8	24.4	26.1	27.9
Supply	21.8	22.8	24.4	26.1	25.1
Difference	0.0	0.0	0.0	2.4	2.8
% Deficiency	0%	0%	0%	0%	10%
Multiple Dry Water Years - Year 2					
Demand (1)	22.0	23.1	24.8	26.4	27.9
Supply	19.4	19.7	20.3	20.9	22.3
Difference	2.6	3.4	4.5	5.5	5.6
% of Demand	12%	15%	18%	21%	20%
Multiple Dry Water Years - Year 3					
Demand (1)	22.2	23.4	25.1	26.8	27.9
Supply	19.4	19.7	20.3	20.9	22.3
Difference	2.8	3.7	4.8	5.9	5.6
% of Demand	13%	16%	19%	22%	20%

(1) Interpolated from 2030 Purchase Estimates, SFPUC, 2004
Source: San Francisco Public Utilities Commission communication dated June 1, 2005, except for 2030. The supply number in 2030 is higher than listed in the SFPUC communication and is based on a City of Hayward estimate assuming a 10% system-wide shortage in the first dry year and 20% system-wide shortages in the following two years.

Figure 5-3
Supply and Demand Comparisons in Multiple Dry Years



FACTORS RESULTING IN INCONSISTENCY OF SUPPLY

As noted previously, SFPUC can meet Hayward's water usage needs in years of normal or above-normal precipitation. An inconsistent supply of water from SFPUC would generally result from climatic conditions, i.e., lower than normal levels of precipitation. On a short-term basis, shortages may also result from system maintenance. Supplies are not expected to be impacted by long-term shortages due to legal or environmental factors. As noted in Chapter 3 Water Supply and Distribution, a Program Environmental Impact Report is being prepared for the Water System Improvement Program and other project-specific environmental review may be required.

REPLACEMENT OF INCONSISTENT SUPPLIES

Water supplies are expected to be impacted by less-than-normal precipitation, resulting in reduced water supplies and rationing for a limited duration of time. Water supply shortages would be managed through rationing programs and increased demand management, as described in the Water Shortage Contingency Plan section of this document. Hayward currently has no plans to develop alternative sources, such as transfers, recycling, or desalination, to supplement water supplies.

WATER QUALITY IMPACTS ON RELIABILITY

Water supplies from the SFPUC Regional Water System, delivered from the Tuolumne River and local reservoirs, are of very high quality. The majority of the water supply originates in the upper Tuolumne River watershed, high in the Sierra Nevada and removed from human development pollution. Known as Hetch Hetchy water, this supply is conveyed to the Bay Area through a system of pipes and tunnels. The U.S. Environmental Protection Agency and the California Department of Health Services currently approves the use of this drinking water source without requiring filtration. Local water from the Alameda watershed, which provides a small amount of Hayward's water, requires filtration to meet drinking water quality standards. The filtered and treated water from the local watershed is blended with Hetch Hetchy water. Water quality is continuously monitored and tested to ensure that water delivered to customers meets or exceeds federal and state drinking water/public health standards.

The Water System Improvement Program, discussed in Chapter 3 Water Supply and Distribution, lists as one of its goals the ability to meet current and future water quality standards. It is anticipated that there will be no degradation of water quality in the future and that water quality issues will not impact current water management strategies or supply reliability.

WATER SHORTAGE CONTINGENCY PLAN

This section provides a water shortage contingency analysis to document the stages of action that have been and would be taken by the City of Hayward in response to water supply shortages.

STAGES OF ACTION

Hayward's past experience with water shortages, most notably in 1977 and from 1987-1992, has shaped its current plans for managing such an event in the future. The following stages have been developed to respond to increasingly severe drought conditions and are triggered by water supplies.

Table 6-1
Water Shortage Stages of Action

Stage	Water Supply Conditions	% Shortage
I	• Single dry year • Supply is 90 to 99% of normal	Up to 10%
II	• Critically dry year • Supply is 80 to 90% of normal	10 – 20%
III	• Second dry year or critically dry year • Supply is 50 to 80% of normal • Loss of 20 to 50% of supply due to emergency	20 – 50%
IV	• Supply is less than 50% of normal • Loss of 50% or more of supply due to emergency	Over 50%

Source: City of Hayward

ESTIMATED MINIMUM SUPPLY FOR NEXT THREE YEARS

SFPUC has provided the following estimated minimum water supply available to Hayward during the next three years (2006 to 2008) based on the driest three-year historical sequence over an 82-year period.

Table 6-2
Estimated Minimum Supply for the Next Three Years – In Million Gallons Per Day

Source	Normal	2006	2007	2008
San Francisco Public Utilities Commission	19.59	17.82	15.49	15.49

Source: San Francisco Public Utilities Commission communication dated June 1, 2005

CATASTROPHIC WATER SUPPLY INTERRUPTION PLAN

The City of Hayward has taken significant steps to plan for and to supplement potable water supplies in the event of an interruption in regular water supplies, including interties with two neighboring water agencies and implementation of an emergency well system. One of the agencies with which Hayward shares interties (EBMUD) is fully independent of the SFPUC water supply; the other agency (ACWD) receives about 70% of its supply from sources other than SFPUC.

The following actions could be taken in the event of an interruption in water supplies due to a regional power outage, earthquake, or other disaster. The actual actions would depend on the severity of the disruption and the number of customers impacted.

- Notify customers of the need to limit water consumption. This could be by means of media contact, written notices to be posted in public places or hand-delivered and/or use of the City's emergency notification telephone system (Dialogic)
- Make contact with high-water-use businesses and other businesses through use of the "sensitive water users" list maintained by the City of Hayward
- Activate emergency interties, using emergency generators if necessary
- Activate emergency well system, using each well's emergency generator if necessary

Hayward has developed a comprehensive Water System Emergency Response Plan to incorporate all aspects of disaster planning into one document. The ERP utilizes the Standardized Emergency Management System (SEMS) to identify roles and responsibilities during an emergency. The ERP also includes instructions for communicating with SFPUC and other key agencies in the event of an emergency. In addition, Hayward is also a member of the Water Agency Response Network, a mutual aid agreement with water agencies throughout the State of California. The signatories may be called upon during an emergency to provide resources if they are available.

PROHIBITIONS, PENALTIES AND CONSUMPTION REDUCTION METHODS

Hayward's most recent experience with water supply shortages was during the state-wide drought of the early 1990s, in which Hayward customers reduced water use by 27%. The rationing program implemented was modeled on the very successful effort launched in 1977, in which Hayward customers reduced water usage by about 32%. It is expected that future rationing programs would follow this model, although changes could be incorporated to fit current conditions.

Expected Conservation Actions

The following list identifies specific conservation actions that Hayward customers are asked to take during a Stage I rationing effort. Hayward would implement a public information campaign to specifically address the situation.

- Avoid washing sidewalks, driveways, parking lots, buildings and other outdoors areas and structures
- Utilize a water recirculating system in ornamental fountains
- Repair broken or defective plumbing and irrigation systems
- Avoid use of hoses without a hose bib in washing vehicles
- Irrigate landscaping carefully to avoid overwatering
- Limit irrigation to early morning and evening hours to reduce evaporation
- Install water-saving devices
- Ensure full loads in dishwashers and clothes washing machines

Mandatory Prohibitions

Table 6-3 lists mandatory prohibitions during water shortages and the rationing stage at which the prohibition would become mandatory.

Table 6-3
Water Use Prohibitions

Prohibition	**Stage When Prohibition Becomes Mandatory**
Water use in excess of allocation (implement rate structure appropriate to the shortage)	Stage II (10% to 20% reduction)
Washing buildings, sidewalks, driveways, parking lots, and other outdoor areas	
Using defective plumbing and irrigation systems	
Filling or refilling swimming pools, spas or hot tubs	
Using water to fill or maintain water level in decorative fountain	
Serving water in restaurants (unless specifically asked by customer)	
Washing vehicles, except in commercial carwashes	
Using potable water in construction activities unless no other water is available	
Continuation of all Stage II prohibitions	Stage III (20 to 50% reduction)
Using potable water for cooling purposes and commercial car washes, unless recycled	
Using potable water for golf course irrigation	
Use of potable water for street sweeping	
Use of potable water to irrigate landscaping in new developments	

Source: City of Hayward draft ordinances and resolutions

Reductions Above 50%

In a Stage IV rationing effort, the City would intensify all of the prohibitions as listed in Table 6-3. Additional measures, such as limited watering days, would be added to achieve savings. The majority of additional savings would come from further reduced customer allocations.

Penalties for Excess Use

During the most recent drought, excess use charges for Hayward customers were implemented based on excess use charges applied to the City by SFPUC for water used in excess of Hayward's overall monthly allocations. SFPUC's excess use charges are set on a "graduated" basis, and Hayward has followed this same system with its own customers. Specifically, in 1991, excess water up to 10% over the allotment was billed at a higher rate per unit (hundred cubic feet), and an additional higher tier was implemented for excess water from 10% to 20% over the allotment. This scale, which matched that of SFPUC, provided sufficient deterrent. It is expected that a variation of this scale would be implemented during a future supply shortage. The exact amount would depend on SFPUC's excess use rate schedule and would be implemented during Stage II or III rationing.

Revenue Impacts of Reduced Sales

Hayward's rate structure is based on a cost-of-service method where the beneficiaries of a service pay for the cost of providing the service, and where one customer class does not unduly subsidize another. The City has implemented a three-tier increasing block rate structure to promote water conservation, and reviews water rates annually to ensure adequate revenues to meet operating and capital expenses. A key factor in this review is anticipated consumption. A water shortage would be expected to result in lower consumption and reduced revenues. The reduced revenues would be mitigated in part by lower costs for purchasing water.

Hayward would also anticipate expending funds on the implementation of a water rationing program, including:

- Computer programming modifications to implement excess water usage fees
- Computer programming needed to determine appropriate customer allocations
- Advertising and public education materials
- Possible additional customer service staff to support rationing program

The rate structure, including excess use charges would be developed to achieve a revenue neutral impact to the extent possible. In the event that revenue was lower than expenditures, Hayward would rely upon the short-term use of reserves to offset the deficit. Also, some types of maintenance would be deferred, if such deferment would not

compromise water quality or service, and short-term cost efficiencies would be implemented to reduce the impact of reduced water sales.

USE MONITORING PROCEDURES

All water in Hayward is metered, including water used by the City government and other public agencies. All meters are read bi-monthly, and water bills are issued based on actual usage. Customer bills include usage data from the same time period the previous year, to enable customers to monitor their own water use. The utility billing system is capable of generating a variety of data for a given period of time, including consumption by customer type, meter size, and selected businesses. The City can also readily track water usage for large users such as the university, colleges, park district, City facilities, and certain large-use businesses. These reports would be used to determine customer use reductions.

The City also maintains a state-of-the-art Supervisory Control and Data Acquisition (SCADA) system to monitor the water distribution system. Water usage at various locations in the system can be tracked virtually hourly and reports can be generated to provide operating data and information. The SCADA can be used to determine reductions in water deliveries from SFPUC, consumption trends in various locations, and other useful monitoring data.

DRAFT WATER SHORTAGE RESOLUTIONS AND ORDINANCES

Appendix D contains samples of resolutions and ordinances that were adopted during the most recent drought in the early 1990s. It is anticipated that the City would use similar documents to implement future water shortage programs.

WATER RECYCLING

This section addresses Hayward's current and future recycled water usage.

COORDINATION OF RECYCLED WATER PLANNING

The following agencies either participated in the developing a recycled plan for Hayward's service area, or provided resources that were used to develop a plan:

Table 7-1
Participating Agencies

Agency	Role
San Francisco Public Utilities Commission	Prepared Wholesale Customer Recycled Water Potential Technical Memorandum
East Bay Dischargers Authority (EBDA)	Prepared Water Recycling Master Plan for member agencies (including Hayward) and assisted in projecting recycled water deliveries during the planning period
Bay Area Regional Water Recycling Program	Prepared a Bay Area water recycling program to identify potential regional and local projects
City of Hayward Water Pollution Control Facility	Provided information on treatment and disposal of wastewater, as well as projections regarding future wastewater flows

Source: City of Hayward

In 1993, EBDA prepared a Water Recycling Master Plan to investigate potential recycled water projects. The study focuses primarily on recycling applications within the service areas of Hayward and the unincorporated areas of Alameda County (Castro Valley and San Lorenzo). It is EBDA's goal to maximize reuse of wastewater, and thus the study centered on potential recycling projects that have a good possibility of being implemented.

The Bay Area Regional Water Recycling Program (BARWRP), in which EBDA participates, developed a comprehensive regional Water Recycling Master Plan in 1998 to explore potential water recycling partnerships and regional projects. The City of Hayward, through EBDA, will continue to participate in this regional effort to expand the use of recycling water throughout the Bay Area and implement suitable projects when it is cost effective to do so.

The City of Hayward has included in the Sewer Improvement Fund of its Five-Year Capital Improvement Program a project to further study the feasibility of using recycled water. This study would build on and update the 1993 EBDA Master Plan, but with a focus more specifically on delivering effluent from the Hayward WPCF for use within Hayward.

WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

The City of Hayward owns and operates the wastewater collection and treatment system that serves almost all of the residential, commercial, and industrial users within the incorporated City limits. The City also serves a small number of properties in unincorporated areas of Alameda County. A very small number of customers within the City limits are served by Oro Loma Sanitary District.

Wastewater Collection

The wastewater collection system is comprised of 375 miles of sewer mains, 9 sewage lift stations, and 2.5 miles of force mains.

Wastewater Treatment

The Water Pollution Control Facility (WPCF) is permitted to treat up to 16.5 mgd of wastewater with primary through advanced secondary treatment utilizing primary clarification, a high-rate trickling filter, and secondary clarification. The treated effluent is dechlorinated prior to discharge through a deepwater outfall into the San Francisco Bay. Following is a description of current treatment processes:

Headworks. Channel monsters reduce the size of solids in wastewater.

Vacuators. Wastewater flows through two vacuators where initial treatment strips oils, greases, and floatable materials out of the wastewater. These materials are pumped directly to an anaerobic digester.

Primary Sedimentation. Three primary clarifiers remove 60 percent of suspended solids, about 30 percent of the biochemical oxygen demand, and any remaining floatable materials.

Secondary Treatment. Dissolved solids and biochemical oxygen demand are converted into settleable biosolids in a fixed film reactor.

Secondary Sedimentation. A secondary clarifier removes any remaining settleable material, which is thickened with primary clarifier sludge and pumped into an anaerobic digester.

Sludge Handling. Sludge is anaerobically digested and deposited into drying beds to be air-dried. The dried sludge is then used as a soil amendment in a vegetative cover on top of a closed landfill or as alternative daily cover at an existing landfill site.

Gas Generation. Methane gas is a byproduct of sludge digestion. The gas generated at the Hayward WPCF is used to fuel the facility's co-generation plant, which produces 40 percent of the facility's electric needs, and except on rare occasions, all of the heat required for the digesters.

The City is embarking on a $57 million WPCF Phase I Improvement project to improve the reliability and redundancy of the treatment processes. The project will consist of constructing a second trickling filter, two final (or secondary) clarifiers, a solids contact tank, and solids thickening facilities. It is expected that construction, which is currently underway, will be completed in 2008.

Table 7-2 tabulates the volume of collected and treated wastewater through the planning period.

Table 7-2
Wastewater Collected and Treated – In Acre-Feet/Year

	2000	2005	2010	2015	2020	2025
Quantity Collected/Treated	14,338	14,898	15,919	17,033	18,226	18,482
Quantity that Meets Recycled Water Standard (1)	14,338	14,898	15,919	17,033	18,226	18,482

Source: Water Pollution Control Facility Master Plan

(1) Secondary treatment levels

Wastewater Disposal

Hayward is a founding member of the East Bay Dischargers Authority (EBDA), a joint powers agency which disposes of treated wastewater through a large outfall to the San Francisco Bay. Effluent from the WPCF is disinfected with sodium hypochlorite and discharged into the East Bay Dischargers Authority (EBDA) system. The chlorine residual is removed prior to discharge to the San Francisco Bay.

Table 7-3 tabulates disposal of non-recycled wastewater.

Table 7-3
Disposal of Non-Recycled Water – in Acre-Feet/Year

	Treatment Level	2005	2010	2015	2020	2025
Disposal to San Francisco Bay (through EBDA outfall) [1]	Secondary	11,246	12,729	13,413	14,572	14,716

Sources: Water Pollution Control Facility Master Plan and East Bay Dischargers Authority

[1] Total disposal in this table is comprised of the total wastewater treated less the recycled water use listed in Table 7-4. It must be noted that the recycled water totals in Table 7-4 are EBDA-wide totals, of which Hayward contributes a portion. It is difficult, however to segregate the amount of recycled water that is specifically diverted from Hayward.

CURRENT USES OF RECYCLED WATER

EBDA supplies the Skywest Golf Course with recycled water. The Hayward Area Recreation and Parks District (HARD) uses an average of about 160,000 gpd (180 acre-feet per year) to irrigate the 100-acre golf course, which was previously irrigated from a 250-foot well. EBDA also provides recycled wastewater to the Hayward marsh, which is operated jointly by EBDA, Union Sanitary District, and the East Bay Regional Parks District. The Marsh uses approximately 3.1 mgd from the EBDA pipeline. Various other uses within the service areas of EBDA's member agencies divert an additional 380,000 gpd from EBDA discharge, but not necessarily including Hayward effluent.

Table 7-4 summarizes projected and actual 2005 recycled water use that includes Hayward effluent.

Table 7-4
Projected and Actual 2005 Recycled Water Use – In Acre-Feet/Year

Use	Treatment Level	2000 Projection of Recycled Water Use for 2005	2005 Actual Recycled Water Use
Landscape Irrigation	Secondary	226	180
Wetlands Enhancement	Secondary	2,964	3,475
Total		3,190	3,655

Source: East Bay Dischargers Authority

The overall use of recycled water in 2005 was slightly higher than projected in the 2000 UWMP due to additional water diverted to the Hayward marsh. Landscape irrigation water used at the Skywest Golf Course was slightly lower than anticipated because of cool temperatures and higher-than-normal precipitation during the spring months.

POTENTIAL USES OF RECYCLED WATER

Projects within the EBDA service area with the highest potential for recycled water use are identified in the table from the 1993 Water Recycling Master Plan and are included in Appendix E. Tables 7-5 and 7-6 summarize potential uses and quantities of recycled water in Hayward by project and by type of use. All of the projects require secondary treatment, except for California State University and Chabot College, which must be supplied with tertiary treated water due to the unrestricted nature of access to these properties.

Table 7-5
Current and Potential Recycled Water Projects – In Acre-Feet/Year

Name of Project	Type of Use	2005	2010	2015	2020	2025
Current Uses						
Skywest Golf Course	Landscape	180	180	180	180	180
Hayward Marsh	Wetlands	3,475	3,475	3,475	3,475	3,475
Potential Uses						
Hayward Airport	Landscape			430	430	430
Holy Sepulchre Cemetery	Landscape				31	31
Chapel of the Chimes	Landscape				3	3
Chabot College	Landscape					86
CSU	Landscape					26
Total		3,655	3,655	4,085	4,119	4,231

Source: Water Recycling Master Plan, East Bay Discharges Authority, 1993

Table 7-6
Current and Potential Uses of Recycled Water – In Acre-Feet/Year

Type of Use	Treatment Level	2005	2010	2015	2020	2025
Landscape Irrigation	Secondary	180	180	610	644	644
Landscape Irrigation	Tertiary	0	0	0	0	112
Wetlands	Secondary	3,475	3,475	3,475	3,475	3,475
Agriculture	N/A	0	0	0	0	0
Wildlife Habitat	N/A	0	0	0	0	0
Industrial	N/A	0	0	0	0	0
Groundwater Recharge	N/A	0	0	0	0	0
Total		3,655	3,655	4,085	4,119	4,231

Source: Water Recycling Master Plan, East Bay Discharges Authority, 1993

In addition to the projects identified in the EBDA Water Recycling Master Plan, there is potential for the City to deliver an average of 4.1 mgd (about 4,600 acre-feet/year) of secondary treated wastewater to a proposed 600 megawatt combined cycle electric

generating facility. The wastewater will be treated on the customer's site to tertiary standards and utilized for cooling water. The project, which requires a permit amendment based on a previously approved similar project, is currently in the early stages of development and is yet to be approved by the California Energy Commission. CEC approval may come in 2006, with construction to get underway in 2007.

The recycled water plan presented in the 2000 UWMP will likely be delayed due to cost factors and other priority projects, including a $57 WPCF Phase I Improvement project to upgrade the wastewater treatment facility. The City had envisioned initiating recycled water delivery to the Hayward Executive Airport for irrigation purposes by 2010; however, this project has now been moved out to 2015 for planning purposes, partly due to the City's desire to revisit its recycled water master plan through a new feasibility study. The Master Plan that is now in place is more than ten years old, and in need of a thorough review before proceeding. Therefore, all projects defined in the 2000 UWMP have been moved out by five years and are subject to further change depending on the result of an updated study.

TECHNICAL AND ECONOMIC FEASIBILITY

The 1993 Water Recycling Master Plan identified recycling projects with a high water demand and a high probability of implementation. The feasibility of each potential project was evaluated using the following criteria:

- User Demand/Interest
- Acceptance by Public/Regulatory Agencies
- Required Level of Treatment
- Distribution/Storage Requirements
- Rough Scale Deliverable Water Costs

Rough scale deliverable water costs depend upon required treatment and on the distribution and storage facilities needed to implement the project. Ultimately the viability of a project comes down to the capital costs and acceptance by regulatory agencies and the public. At this time, irrigation projects, particularly on sites with restricted access, are the most cost effective and technically feasible.

Although irrigation demands tend to be seasonal, they involve large amounts of water, particularly in late spring and through the summer. Also, most of the irrigation projects identified in the Water Recycling Master Plan are in areas that have restricted public access and do not produce food products, and thus only secondary effluent is required. The other advantage of irrigation projects is that they typically do not require on-site storage facilities, so implementation costs are lower. The irrigation project that could be implemented in the next five to ten years is at the Hayward Executive Airport, a site that is managed by the City of Hayward. Two cemeteries in Hayward have also expressed interest in using recycled water, but would likely take longer to implement. Two other

potential irrigation projects—California State University campus and Chabot Community College—have unrestricted public access and would therefore need tertiary treated wastewater. These would be long-range projects because the construction and operating costs would be significantly higher. Irrigation of the West Winton Landfill, which is identified in the Master Plan as having high potential, will likely not be implemented for two reasons. First, the vegetative cover on the landfill is naturally growing (and dying) seasonal vegetation needing minimal water. Second, there is concern about the potential for seepage into the landfill and potential impact on groundwater.

Other uses are not feasible at this time. Groundwater recharge projects are not suitable in EBDA's service area for several reasons. First, injection wells would be needed to recharge the water table, and the cost of constructing and operating these treatment and injection facilities would be very high. Also, studies have shown that injected water can force salt water into potable water aquifers, depending on the aquifer configuration and location. Local water agencies that rely on the groundwater basins have indicated that they would have major concerns with introducing recycled water into groundwater sources.

Industrial users are particular about the quality of water they received and are concerned that the quality of recycled water would be lower and inconsistent. High tech manufacturing facilities, for example, depend upon very high quality water. One potential industrial use of recycled water is for dust control.

Finally, Hayward does not serve agricultural customers or wildlife habitat sites, with the exception of the Hayward Marsh, noted earlier.

In general, the cost of producing good, consistent quality wastewater and then delivering that wastewater to points of use is a major impediment to implementing water recycling projects at the local level.

ENCOURAGING RECYCLED WATER USE

EBDA adopted a Water Recycling Policy in 1991 to encourage use of recycled water whenever it is a suitable alternative to potable water. A copy of the policy, which is supported by the City of Hayward, is included in Appendix E. The EBDA policy specifically cites education programs to increase public awareness and acceptance of water recycling as critical to the implementation of future projects. To date, EBDA and the City have not offered financial incentives; however, both agencies will continue to work towards providing recycled water to interested users. At this time, the City has taken no action to require dual distribution systems.

Potential use of recycled water is summarized in Tables 7-5 and 7-6. If all potential projects are implemented by 2025, the estimated use of recycled EBDA wastewater would be about 3,766 acre-feet per year.

RECYCLED WATER OPTIMIZATION PLAN

EBDA's Water Recycling Policy, adopted in 1991, provides the framework for evaluating potential water recycling projects. The 1993 EBDA Water Recycling Master Plan, described earlier, serves as a guidance document to optimize the use of recycled water by identifying projects with a high potential for implementation, providing preliminary cost estimates, and discussing potential benefits and drawbacks of each application. Project analyses for each high potential application are included in Appendix E. Due to limited funding and varied locations, project implementation will need to be phased. In addition, public outreach and education efforts may be needed to address concerns about the safety of using recycled water for certain applications.

CHAPTER 8

DEMAND MANAGEMENT

This section provides a description of Hayward's water conservation program, including the implementation status of various Best Management Practices (BMPs).

The City of Hayward is a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU). Appendix F includes copies of the 2003 and 2004 annual reports and coverage reports summarizing the City's implementation of BMPs and progress towards satisfying the coverage requirements of each BMP. The 2003 and 2004 annual reports are 100% complete per the CUWCC website.

The City of Hayward has one of the lowest per capita usages among agencies that purchase water from SFPUC. The demand study base year data (discussed in Chapter 4, Projected Water Demand) shows that Hayward's use is 61 gallons per capita per day (gpcd) in single-family homes and 54 gpcd in multi-family units. Nonetheless, Hayward has implemented a water conservation program to encourage further resource conservation.

IMPLEMENTATION OF DEMAND MANAGEMENT MEASURES

This section will address the demand management plan shown in the 2000 UWMP and discuss the current implementation status:

BMP 1 – Water Survey Programs for Single-Family and Multi-Family Residential Customers

The City has not yet implemented a formal residential survey program due to cost considerations. A program that combines residential surveys, residential plumbing retrofits, and school education is currently being explored for regional implementation by the Bay Area Water Supply and Conservation Agency (BAWSCA). The City will consider participation in this program once costs have been better defined.

BMP 2 – Residential Plumbing Retrofit

A very successful program was implemented in 1999, in which over 4,800 water conservation kits were distributed to residential customers. The kits included a high-quality showerhead, kitchen and bathroom faucet aerators, toilet tank displacement bags, and dye tablets. Additional kits may be distributed as part of a school education program being considered by BAWSCA (see discussion under BMPs 1 and 8).

BMP 3 – Water System Audits, Leak Detection, and Repair

The City is meeting coverage requirements for this BMP. Until this year, annual water audits did not indicate a need for a system-wide leak detection program. Based on the latest water audit, a project has been included in the 2005-06 five-year capital improvement program to implement a leak detection program to check the water distribution system.

BMP 4 – Metering with Commodity Rates

Hayward is meeting coverage requirements for this BMP. All water use in Hayward is metered.

BMP 5 – Large Landscape Conservation Programs and Incentives

This BMP has not yet been fully implemented due to cost. However, Hayward adopted a Water Efficient Landscape Ordinance over a decade ago to regulate the plant materials and irrigation systems installed in new developments. The Ordinance is administered by a licensed landscape architect on staff, who reviews and approves landscaping plans to ensure conformance with the provisions of the Ordinance.

BMP 6 – High Efficiency Washing Machine Program

The City is currently implementing this program as part of the Bay Area Efficient Clothes Washer Rebate Program and meeting coverage requirements.

BMP 7 – Public Information Program

The City is meeting the requirements for this BMP through distribution of written materials, participation in community events, billing inserts, and other means.

BMP 8 – School Education

Hayward has not yet implemented a comprehensive school education program. A program that combines residential surveys, residential plumbing retrofits, and school education is currently being explored for regional implementation by the Bay Area Water Supply and Conservation Agency (BAWSCA). The City will consider participation in this program once costs have been better defined.

BMP 9 – Commercial, Industrial and Institutional Water Conservation

Hayward is currently offering a pre-rinse spray valve program to install water conserving spray valves at food service facilities. Other commercial and industrial program will be offered in the future, most likely as part of a regional effort.

BMP 10 – Wholesale Agency Assistance Program

Not applicable to Hayward

BMP 11 – Conservation Pricing

Hayward is meeting the requirements for this BMP. A two-tiered rate structure was implemented in the early 1990s to encourage water conservation. A third tier was added in 2003. Hayward also offers reduced sewer service rates for water consumption of 0-5 units and 6-10 units during a billing period.

BMP 12 – Conservation Coordinator

Hayward is meeting the requirements for this BMP.

BMP 13 – Water Waste Prohibition

Hayward is meeting the requirements for this BMP through adoption of an ordinance to prohibit certain water wasting, non-essential activities.

BMP 14 – Ultra Low-Flow Toilet Replacement Program

The City has partially met the requirements for this BMP through a replacement rebate program that was offered for several years. However, replacement of toilets in single-family residential homes was shown to be cost ineffective due to natural replacement rates. A program to replace toilets in commercial and multi-family residential units is being explored by BAWSCA and will be considered for implementation in Hayward.